

**Amendments to the Claims:**

1. (currently amended) A ~~neuron-cellular~~ chip platform, comprising a charge coupled detector array device (CCD), a thin protective film over the CCD, a thin patterned film applied to the protective film to promote ~~neuron-cellular~~ growth, and an insulator material for insulating CCD electronics from a ~~neuron-cellular~~ culture.
2. (currently amended) The ~~neuron chip platform cell potential measurement apparatus~~ of claim 14, wherein the detectors on the CCD are about 6 to 15 microns square.
3. (currently amended) The ~~neuron chip platform cell potential measurement apparatus~~ of claim 2, wherein the protective film and the patterned film are deposited by plasma deposition.
4. (currently amended) The ~~neuron chip platform cell potential measurement apparatus~~ of claim 3, wherein said protective film is comprised of a single, composite or multiply-layered thin film that consists primarily of combinations of different oxides and/or nitrides of alumina, silica, aluminum silicate, titanium oxide, tantalum oxide, silicon dioxide, aluminum oxide, titanium oxide, tantalum oxide, silicon nitride, aluminum nitride, titanium nitride and tantalum nitride, carbon, Mg, Ti, Pd, Ta, Ir, Pt, Au, parylene and combinations thereof.
5. (currently amended) The ~~neuron chip platform cell potential measurement apparatus~~ of claim 4, wherein said protective film is about 100 to 1000 Angstroms in thickness.
6. (currently amended) The ~~neuron chip platform cell potential measurement apparatus~~ of claim 5, wherein said patterned film is comprised of diamond-like carbon.
7. (currently amended) The ~~neuron chip platform cell potential measurement apparatus~~ of claim 6, wherein the patterned film is about 100 to 300 Angstroms in thickness.
8. (currently amended) The ~~neuron chip platform cell potential measurement apparatus~~ of claim 7, wherein the insulator material is comprised of any wire insulator, sealant, bonding agent, epoxy, a metal, synthetic rubber or elastomer, a polymer composition having no porosity, glass, ceramic or porcelain.

9. (currently amended) The ~~neuron chip platform~~ cell monitoring device of claim ~~8~~22, further comprising a cell culturing layer above the patterned film.
10. (currently amended) The ~~neuron chip platform~~ cell monitoring device of claim 9, wherein said cell culturing layer is selected from the group consisting of collagen, fibronectin, Collagen Type I, Collagen Type IV, laminin, extracellular basement membrane proteins or and combinations thereof.
11. (currently amended) The ~~neuron chip platform~~ cell monitoring device of claim 10, ~~further comprising neurons wherein the grown on~~ the cell culturing layer is fibronectin.
12. (currently amended) The ~~neuron chip platform~~ cell monitoring device of claim ~~22~~11, further comprising a means to maintain an environment for culture of the cells on said platform to enable long-term measurement and growth, wherein said environmental maintenance means comprising a temperature adjustment means for maintaining a constant temperature, a means for circulating a culture solution, a means for supplying a mixed gas of air and carbon dioxide, and a covering means to keep the cells enclosed on the platform.
13. (currently amended) The ~~neuron chip platform~~ cell monitoring device of claim ~~22~~12, further comprising microelectrodes and conducting tracks deposited on the protective film by plasma deposition.
14. (currently amended) A cell potential measurement apparatus comprising
- a-a) a ~~neuron~~ cellular chip platform comprising a charge coupled detector device array (CCD), a thin protective film over the CCD, a thin patterned film to promote ~~neuron~~ cellular growth, and an insulator;
  - b-b) an electrical connection means connected to the ~~neuron~~ cellular chip platform;
  - c-c) an illumination source;
  - d-d) a stimulation signal supply means to be connected to the electrical connection means of the neuron chip platform for providing electrical stimulation to the cells; and

- e-c) a signal or image processing means to be connected to the electrical connection means of the ~~neuron~~-cellular chip platform for processing an output signal or image arising from electrical physiological activities of the cells.
15. (currently amended) The cell potential measurement apparatus of claim 14, wherein the ~~neuron~~-cellular chip platform is detachable from the electrical connection means, the stimulation signal supply means and the signal or image processing means.
16. (original) The cell potential measurement apparatus of claim 15, further comprising microelectrodes and conducting tracks deposited onto the protective film by plasma deposition.
17. (original) The cell potential measurement apparatus of claim 16, further comprising a cell culturing layer above the patterned film.
18. (currently amended) The cell potential measurement apparatus of claim 14, wherein said cell culturing layer is ~~comprised of Collagen Type I~~ selected from the group consisting of collagen, laminin, fibronectin, extracellular basement membrane proteins and combinations thereof.
19. (currently amended) The cell potential measurement apparatus of claim 18, further comprising ~~neuron cells~~ grown on the cell culturing layer.
20. (currently amended) A method of detecting and monitoring live networks of ~~neurons~~cells comprising the steps of:
- a) providing a cell potential measurement apparatus of claim 17;<sup>14</sup>
  - b) adding a cell culturing layer seeded with ~~neurons~~cells;
  - c) allowing the ~~neurons~~cells to grow ~~develop neurite extensions or dendritic connections~~;
  - d) providing electrical or environmental stimulation to the ~~neurons~~cells;
  - e) detecting and recording the ~~neurons~~cellular response via the CCD;
  - f) analyzing said ~~neurons~~cellular response using a signal or image processing means.

21. (New) The cellular potential measurement apparatus of claim 14, wherein the cells are cardiac cells.
22. (New) A cell monitoring device comprising:
  - a) a cellular chip platform comprising a charge coupled detector device array (CCD), a thin protective film over the CCD, a thin patterned film, and an insulator material for insulating CCD electronics;
  - b) an electrical connection means connected to the cellular chip platform; and
  - c) a signal or image processing means to be connected to the electrical connection means of the cellular chip platform for processing an output signal or image arising from electrical physiological activities of the cells.
23. (New) The cell monitoring device of claim 22, wherein the cellular chip platform is detachable from the electrical connection means, and the signal or image processing means.
24. (New). The cell monitoring device apparatus of claim 22, wherein the protective film comprises an impermeable and inert material.
25. (New) The cell monitoring device of claim 24, wherein the impermeable and inert material is comprised of combinations of different oxides and/or nitrides.
26. (New) The cell monitoring device of claim 22, wherein the insulator material is comprised of any wire insulator, sealant, bonding agent, epoxy, a metal, synthetic rubber or elastomer, a polymer composition, glass, ceramic or porcelain.
27. (New) The cell monitoring device of claim 26, wherein the insulator material is comprised of a polymer composition.
28. (New) The cell monitoring device of claim 9, further comprising cells grown on the cell culturing layer, wherein the cells grown are selected from the group consisting of cardiac, smooth muscle, striated muscle and neurons.
29. (New) The cell monitoring device of claim 28, wherein the cells are cardiac cells.
30. (New) The cell monitoring device of claim 22, further comprising an external illumination source.

31. (New) The cell monitoring device apparatus of claim 22, further comprising a stimulation signal supply means to be connected to the electrical connection means of the cellular chip platform.
32. (New) The cell monitoring device of claim 31, wherein the stimulation signal supply means to be connected to the electrical connection means of the cellular chip platform is a power supply.
33. (New) The cell monitoring device of claim 22, wherein the detectors on the CCD are about 6 to 15 microns square.